Patent Claims:

1. Method of determining forces and torques acting on a riding vehicle,
c h a r a c t e r i z e d in that measuring signals from acceleration sensors are evaluated which are fitted, preferably in longitudinal, transverse and vertical alignment, to one or more selected points on the vehicle, and that other signals are evaluated which represent the spatial angular velocity of the vehicle and its time derivative, in particular the rolling, pitching and/or yaw velocity and the rolling, pitching and/or yaw acceleration, or at least some of these variables, and that a mathematic model of the vehicle is provided in which forces and torques acting on the vehicle or at least selected components of these forces and torques are determined from the sensor signals.

2. Method as claimed in claim 1,
c h a r a c t e r i z e d in that at least one of the other signals is the measuring signal of a yaw rate sensor fitted to the vehicle.

3. Method as claimed in claim 1,
c h a r a c t e r i z e d in that at least one of the other signals comprises a model-based logical operation of the measuring signals of several acceleration sensors, which are fitted to at least two different points on the vehicle.

4. Method as claimed in any one of claims 1 to 3, c h a r a c t e r i z e d in that wheel forces or at least selected components of the wheel forces or at least selected sums of wheel force components are calculated from the determined forces and torques that act on the vehicle, if necessary, with the aid of further information about the driving-dynamics condition of the vehicle.

5. Method as claimed in any one of claims 1 to 3 and claim 4, c h a r a c t e r i z e d in that for reducing the number of computing operations, wheel force components or sums of wheel force components are calculated directly from the measuring signals, thereby founding on the correlation between the wheel force components and the vehicle forces and vehicle torques described in claim 4.

6. Method as claimed in any one of claims 1 to 5, c h a r a c t e r i z e d in that for determining an imminent risk of rollover of the vehicle at least one transverse acceleration signal, one vertical acceleration signal and one roll angle velocity signal is processed in the mathematic vehicle model.

7. Method as claimed in claim 6, c h a r a c t e r i z e d in that at least one sum of tire contact forces for the left side and another sum of tire contact forces for the right side of the vehicle is determined.

8. Method of determining rollover maneuvers in vehicles with four wheels, c h a r a c t e r i z e d by the features as claimed in any one of claims 1 to 7, wherein rollover of the vehicle

is identified or forecast when the sum of the tire contact forces of one vehicle side falls below a threshold at the current point of time or in a time extrapolation of the determined course of signals relating to the sum of forces.